

Electrolyte Specifications

1.3M LiPF₆ in EC:EMC=3:7 v/v with 10.0 wt% FEC

Characteristics	Requirement	Unit
LiPF ₆ Concentration	1.20 – 1.40	M
EC Concentration	20.0 – 35.0	% (v/v)
EMC Concentration	60.0 – 75.0	% (v/v)
FEC Concentration	7.0 – 14.0	% (w/w)
Water Content	<30	ppm
Hydrofluoric Acid [HF]	<50	ppm
Color	Clear/Colorless (<50)	APHA
Trace Metal Content	<100	ppm

Safety Data Sheet (SDS)**1.3M LiPF₆ in EC:EMC (3:7 v/v) with 10.0 wt% FEC****SECTION 1: IDENTIFICATION****Product Name:** 1.3M Lithium Hexafluorophosphate (LiPF₆) in Ethylene Carbonate (EC) and Ethyl Methyl Carbonate (EMC) (3:7 v/v) with 10.0 wt% Fluoroethylene Carbonate (FEC)**CAS Numbers:**

- LiPF₆: 21324-40-3
- EC: 96-49-1
- EMC: 623-53-0
- FEC: 114435-02-8

Recommended Use: Electrolyte for lithium-ion batteries**Supplier:** Automat Solutions, Inc.**Emergency Contact:** (510) 982-6488**SECTION 2: HAZARD IDENTIFICATION****GHS Classification:**

- Flammable Liquid – Category 2
- Acute Toxicity (Oral) – Category 4
- Skin Irritation – Category 2
- Eye Irritation – Category 2A
- Specific Target Organ Toxicity (Single Exposure) – Category 3

Signal Word: Danger**Hazard Statements:**

- Highly flammable liquid and vapor.
- Harmful if swallowed.
- Causes skin irritation.
- Causes serious eye irritation.
- May cause respiratory irritation.

Precautionary Statements:

- Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Wear protective gloves, protective clothing, and eye protection.
- Avoid breathing vapors.
- In case of fire: Use CO₂, dry chemical, or foam to extinguish.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	% Composition
Lithium Hexafluorophosphate (LiPF ₆)	21324-40-3	1.2-1.4M
Ethylene Carbonate (EC)	96-49-1	20-35%
Ethyl Methyl Carbonate (EMC)	623-53-0	55-75%
Fluoroethylene Carbonate (FEC)	114435-02-8	5-15 wt%

SECTION 4: FIRST AID MEASURES

Inhalation: Remove person to fresh air. Seek medical attention if symptoms persist.

Skin Contact: Wash with soap and water. Seek medical attention if irritation develops.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media: Use CO₂, dry chemical, or foam. Avoid using water.

Hazardous Combustion Products: Hydrogen fluoride, phosphorus oxides, carbon oxides.

Special Protective Equipment: Wear self-contained breathing apparatus and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear PPE including gloves, goggles, and a respirator.

Environmental Precautions: Avoid release to the environment. Prevent from entering waterways.

Cleanup Methods: Absorb with inert material and place in a properly labeled container. Dispose of per local regulations.



SECTION 7: HANDLING AND STORAGE

Handling: Handle in a well-ventilated area. Avoid contact with skin and eyes. Avoid inhalation.

Storage: Store in a cool, dry, well-ventilated place away from incompatible materials. Keep container tightly closed.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use local exhaust ventilation or a fume hood.

Personal Protective Equipment (PPE):

- **Respiratory Protection:** Use NIOSH-approved respirator if airborne concentrations exceed limits.
- **Hand Protection:** Chemical-resistant gloves.
- **Eye Protection:** Safety goggles or face shield.
- **Skin Protection:** Protective clothing.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid

Odor: Slight ether-like odor

Melting Point: Not applicable

Boiling Point: 75-150°C (varies by component)

Flash Point: -6°C (21°F)

Solubility: Miscible with organic solvents, reacts with water

Density: ~1.2 g/cm³

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Incompatible Materials: Water, strong acids, strong bases, oxidizing agents.

Hazardous Decomposition Products: Hydrogen fluoride, phosphorus oxides, carbon oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Routes of Exposure: Inhalation, skin contact, eye contact, ingestion.

Symptoms: Irritation, dizziness, nausea.

Chronic Effects: Prolonged exposure may cause organ damage.



SECTION 12: ECOLOGICAL INFORMATION

Toxicity: Harmful to aquatic organisms.

Persistence & Degradability: Not readily biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in accordance with local, state, and federal regulations. Do not release into the environment.

SECTION 14: TRANSPORT INFORMATION

UN Number: UN1993

Hazard Class: 3 (Flammable Liquid)

Packing Group: II

Proper Shipping Name: Flammable Liquid, N.O.S. (Contains LiPF₆, EC, EMC, FEC)

SECTION 15: REGULATORY INFORMATION

TSCA Status: Listed

SARA 311/312 Hazards: Fire hazard, acute health hazard

SECTION 16: OTHER INFORMATION

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Disclaimer: The information provided in this SDS is believed to be accurate but is not guaranteed to be exhaustive. Users should conduct their own assessments for specific applications.

